UNIV-1100 — First Year Seminar: Scientific Computing Learning Community

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Loading Modules

To access additional mathematical functions such as $\sqrt{\ }$, the trig fuctions sin, cos, and tan the hyperbolic functions sinh, cosh, and tanh, exponential and logarithm exp and log.

Many mathematical functions are are available in a module called `math`

`To access these you` *`import`* `the module, or parts of it`

Loading Modules

```
import math
  .
  .
  .
x = math.sqrt(y)
```

Loading Modules

or

```
from math import sqrt
  .
  .
  .
x = sqrt(y)
```

or

```
from math import *
  .
  .
  .
x = sqrt(y)
```

Loading Modules

or

```
import math as m
  .
  .
  .
x = m.sqrt(y)
```

Data Types

int	- integer
float	- floating point number
complex	- complex number (pair of floats)
str	- string
module	- module
builtin_function_or_method	- built in function

You can convert between types, when such conversion makes sense

Computing a GPA

The (weighted) GPA is...

$$\frac{\sum_i \text{numerical\_grade}(\text{grade}_i) * \text{credit\_hours}_i}{\sum_i \text{credit\_hours}_i}$$

where

grade_i - is the letter grade, obtained in class i

$\text{numerical\_grade}(\cdot)$ - is the numerical equivalent of the letter grade

credit_hours_i - is the number of credits (credit hours) for class i

```
def main():
    sum = 0.0
    weight = 0.0
    n = eval(raw_input("How many grades do you have? "))
    for i in range(n):
        grade = raw_input("Enter grade >> ")
        credits = eval(raw_input("Enter number of credit h
        number = 0.0
        if grade.upper() == "A":
            number = 4.0
        if grade.upper() == "B":
            number = 3.0
        if grade.upper() == "C":
            number = 2.0
        if grade.upper() == "D":
            number = 1.0
        sum = sum + number*credits
        weight = weight + credits
```

```
    gpa = sum/weight
    print "\n Your GPA is", gpa
main()
```

```
def main():
    sum = 0.0
    weight = 0.0
    moredata = "yes"
    while moredata[0].lower() == "y":
        grade = raw_input("Enter grade >> ")
        credits = eval(raw_input("Enter number of credit h
        number = 0.0
        if grade.upper() == "A":
            number = 4.0
        if grade.upper() == "B":
            number = 3.0
        if grade.upper() == "C":
            number = 2.0
        if grade.upper() == "D":
            number = 1.0
        sum = sum + number*credits
        weight = weight + credits
        moredata = raw_input("Do you have more grades? [ye
```

```
    gpa = sum/weight
    print "\n Your GPA is", gpa
main()
```

```
def main():
    sum = 0.0
    weight = 0.0
    grade = raw_input("Enter grade (or <Enter> to quit) >>
    while grade != "":
        credits = eval(raw_input("Enter number of credit h
        number = 0.0
        if grade.upper() == "A":
            number = 4.0
        if grade.upper() == "B":
            number = 3.0
        if grade.upper() == "C":
            number = 2.0
        if grade.upper() == "D":
            number = 1.0
        sum = sum + number*credits
        weight = weight + credits
        grade = raw_input("Enter grade (or <Enter> to quit
```

```
    gpa = sum/weight
    print "\n Your GPA is", gpa
main()
```